UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,923	08/25/2003	Sanjeev Mehrotra	3382-65025	2433

26119 7590 03/03/2008

KLARQUIST SPARKMAN LLP
121 S.W. SALMON STREET
SUITE 1600
PORTLAND, OR 97204

EXAMINER	
LERNER, MARTIN	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
03/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/647,923	MEHROTRA ET AL.	
	Examiner	Art Unit	
	Martin Lerner	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 11, 15 to 24, 28 to 40, 43 to 49, and 78 to 83* is/are pending in the application.

4a) Of the above claim(s) *28 to 40 and 43 to 49* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 to 11 and 15 to 24* is/are rejected.

7)☒ Claim(s) *78 to 83* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicants' election with traverse of Group A, Claims 1 to 11 and 15 to 24, in the reply filed on 01 February 2008 is acknowledged. The traversal is on the grounds that Groups C, D, and F are not patentably distinct. This is not found persuasive for the following reasons:

Firstly, Applicants have elected Group A, but have not presented any arguments about why Group A is not distinct. Thus, because Applicants' arguments are only apparently directed to Groups C, D, and F, Applicants arguments are moot.

Secondly, it is maintained that the restriction requirement is correct, insofar as one having ordinary skill in the art could readily see that Groups A to I, as originally presented, represent patentably distinct groups, due to their differing claim limitations. Both the number and diversity of the claims creates a burden for examination. Thus, Group A requires variable-dimension vector Huffman encoding and run-level encoding, but Group C doesn't require either Huffman or run-level encoding, and instead is directed to first and second numbers of symbols in first and second code tables. Group D is directed to determining whether a first symbol is an escape code, and Group F is directed to determining a Huffman code from a sum of values of audio data symbols. It would appear, therefore, that Groups C, D, and F would be patentably distinct in any continuation application.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 28 to 40 and 43 to 49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in the reply filed on 01 February 2008.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 to 7, 11, 15 to 20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Chen et al. ('888)* in view of *Cellier et al.*

Concerning independent claims 1 and 15, *Chen et al. ('888)* discloses a method of encoding and decoding audio data, comprising:

"encoding a first portion of an audio data sequence in a direct variable-dimension vector Huffman encoding mode [that uses escape codes to indicate changes between plural Huffman code tables for different dimensions]" – a given input stream representing audio input is partitioned into frequency ranges; each range is assigned an entropy encoder optimized to encode that range's type of data; lower frequencies ("a first portion of an audio data sequence") will have more non-zero energy values; the range containing mostly non-zero values is encoded with a variable-to-variable entropy

encoder ("variable-dimension . . . encoding mode"), where a variable length code word is assigned to input sequences (column 2, lines 20 to 66); different encoders selected include vector Huffman variants ("vector Huffman encoding") (column 9, lines 20 to 29);

"switching to a run-level encoding mode at a switch point" – a partition ("a switch point") is determined in a range of frequencies from zero through a maximum (column 6, line 66 to column 7, line 32: Figure 3); a range containing predominantly zero values is encoded with a multi-level run-length encoder (RLE) (column 2, lines 20 to 66);

"encoding a second portion of the audio data sequence in the run-level encoding mode" – a given input stream representing audio input is partitioned into frequency ranges; each range is assigned an entropy encoder optimized to encode that range's type of data; a higher frequency range will have more zero values; a range containing predominantly zero values ("a second portion of the audio data sequence") is encoded with a multi-level run-length encoder (RLE) (column 2, lines 20 to 66); "multi-level run-level encoding" corresponds to run-length encoding having data values of a given level; here, the run-length encoder encodes run-lengths for values of zero, so the run-length encoder is a run-level encoder.

Concerning independent claims 1 and 15, the only elements not clearly disclosed by *Chen et al. ('888)* are a Huffman encoding mode "that uses escape codes to indicate changes between plural Huffman code tables for different dimensions". *Chen et al. ('888)* says that there may be more than two frequency ranges, and uses flags to indicate which encoding table to use. (Column 9, Line 1 to 6) Thus, flags are equivalent to "escape codes" because they tell the encoder/decoder when to change to

a new encoding table. However, *Chen et al. ('888)* does not expressly disclose plural Huffman code tables. Still, *Cellier et al.* teaches lossless compression/decompression of audio data, where a best table selector 103 selects a best Huffman table for a given frame from a compact Huffman tables dictionary 104. Coding block 106 forms each frame into a block and appends a header with an indication of the Huffman table used to encode the samples in the block. (Column 4, Line 46 to Column 5, Line 14: Figures 1 and 2) An objective is to obtain good compression ratios that can go through an unlimited number of compression and decompression cycles with no distortion or loss of data integrity. (Column 3, Lines 4 to 11) It would have been obvious to one having ordinary skill in the art to provide plural Huffman code tables as taught by *Cellier et al.* in a variable dimension Huffman encoder/decoder with flags acting as escape codes of *Chen et al. ('888)* for a purpose of obtaining good compression ratios without distortion or loss of data integrity.

Concerning claims 2 and 16, *Chen et al. ('888)* discloses a flag to indicate an end of a sub-range and to indicate what encoding table to use (column 8, line 47 to column 9, line 6).

Concerning claims 3 and 17, *Chen et al. ('888)* discloses that one range has primarily zero values, while the other range has primarily non-zero values (column 7, lines 56 to 67).

Concerning claims 4 and 18, *Chen et al. ('888)* discloses setting a partition with a certain percentage of frequencies below a boundary (column 7, lines 8 to 11); setting a

partition with a certain percentage of frequencies involves "a pre-determined switch point".

Concerning claims 5, 6, and 19, *Chen et al. ('888)* discloses setting a partition boundary based on trying each frequency, and tracking which boundary yields a minimum number of bits, by an exhaustive search procedure (column 7, lines 11 to 32); thus, a partition boundary is "determined experimentally by testing efficiency of encoding the audio data sequence"; moreover, the procedure is "adaptively determined" because it iteratively adjusts to statistical changes in the properties of the bitstream.

Concerning claims 7 and 20, *Chen et al. ('888)* discloses that there can be three sub-ranges, with flags indicating what encoding table to use (column 9, lines 1 to 6); thus, there is a second switch point for a third sub-range to indicate a third encoding mode, and what encoding table corresponds to that encoding sub-range.

Concerning claims 11 and 24, *Chen et al. ('888)* discloses a computer readable medium for storing program instructions for an audio encoder/decoder (column 3, line 30 to column 4, line 25: Figure 1).

5. Claims 8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Chen et al. ('888)* in view of *Cellier et al.* as applied to claims 1 and 15 above, and further in view of *Applicants' Admitted Prior Art.*

Chen et al. ('888) omits context-based arithmetic encoding of run lengths and levels, but *Applicants' Admitted Prior Art*, Page 8, Lines 14 to 21, states that context-based arithmetic encoding is known for a purpose of encoding input sequence changes

when a context changes. It would have been obvious to one having ordinary skill in the art to employ a known context-based arithmetic encoding as taught by *Applicants' Admitted Prior Art* for a purpose of more efficiently encoding input sequences when a context changes.

6. Claims 9, 10, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Chen et al. ('888)* in view of *Cellier et al.* as applied to claims 1 and 15 above, and further in view of *Dobson et al. ('215)*.

Chen et al. ('888) suggests that encoding methods can generally include run length encoding (RLE) and vector Huffman encoding (column 9, lines 20 to 34), where the run length encoding is run-level encoding because levels are encoded for zero values (column 7, lines 46 to 67), but omits run-level encoding comprising Huffman encoding. However, *Dobson et al. ('215)* teaches a method of encoding audio data based on a combination of Huffman encoders and run length encoders, where a run length encoder encodes coefficients having a zero value. A run length marker, R_m, indicates a length of the run of zero symbols, and the run length sequence is next encoded by Huffman encoding. (Column 23, Line 48 to Column 24, Line 15: Figure 8) Multiple codebooks may be used to encode coefficients, and means to select an appropriate codebook are included. (Column 24, Lines 41 to 49) An objective is to utilize a combination of run length and Huffman encoding method in order to take advantage of both local and global statistics, and quickly and efficiently compress a signal for low bit rates. (Abstract; Column 4, Lines 38 to 46) It would have been

obvious to one having ordinary skill in the art to provide run-level encoding of *Chen et al. ('888)* that further comprises Huffman encoding in order to take advantage of local and global statistics to efficiently compress a signal for low bit rates.

Allowable Subject Matter

7. Claims 78 to 83 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

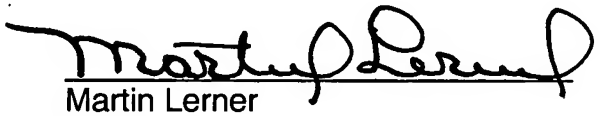
Wilson ('650), Ejima, Keith et al., and Smirnov ('547) disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
2/25/08



Martin Lerner
Examiner
Group Art Unit 2626